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# EXTENSION SERVICE *Review*

MARCH 1955

When the rain falls on  
grasses and legumes, the  
energy impact is diverted  
and the moisture sinks into  
the soil.

Where the ground is bare,  
water strikes hard, seals the  
surface, and runs away, carrying  
soil with it. Stone-capped pedestals  
of soil indicate raindrops' energy.

See page 42

## OTHER SOIL CONSERVATION STORIES

United States Department of Agriculture • Federal Extension Service



# In this Issue—

	Page
Land and People <i>W. R. Tascher</i> .....	43
City Folk and Farmers Study Source and Control of Water .....	45
The Soil Survey is Basic <i>J. G. Steele</i> .....	46
Byproducts of Farm Ponds .....	47
Credit for Soil and Water Conservation .....	48
Minnesota's Soil Conservationists are Educator-Expeditors <i>Harry R. Johnson</i> .....	49
The Human Side of Conservation <i>Dr. E. J. Niederfrank</i> .....	50
Relay the Results of Research <i>Robert M. Salter</i> .....	52
"Save Your Soil . . . Serve Your Community" <i>Hal Allen</i> .....	54
Farm Planning Trials <i>A. M. Hedge</i> .....	56
Spokane County Farmers Salute 4-H Conservation Clubs <i>Al Bond</i> .....	60



## The Mighty Raindrop

Falling raindrops and flowing surface water are both active in detaching and transporting soil on unprotected cultivated areas. The stone-capped pedestals of soil shown in the cover picture show that the force causing the erosion came from above and not from the side as by flowing surface water. The soil particles which were detached fell into the film of water and floated down hill.

Falling rain can reduce the rate at which water enters the soil and affects its structure, making it droughty and more difficult to cultivate. It is important that farmers and ranchers have an understanding of the deteriorating effects of falling water on their agricultural lands. It will reveal a principle underlying the technical recommendations for soil and water conservation. Similar understanding applies to the principles underlying recommendations for wind-erosion control. The cover of grasses and legumes, and to a lesser degree by other growing crops, absorb much of the energy from these falling raindrops.

This is another example of the significance of emphasizing the "Why" in Extension work. The lack of understanding of the principles underlying soil and water conservation will lead to continued land depletion with its harmful effects for people.

—Wendell R. Tascher.

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## EXTRA

If you want an extra copy of this issue for your soil conservationist, write the Editor, Extension Service Review, Department of Agriculture, Washington 25, D. C.



# LAND AND PEOPLE



Visible evidence of soil erosion

## *Key factors in farm and home planning and development*

W. R. TASCHER

Extension Soil Conservationist, U.S.D.A.

PRODUCTIVE agricultural land is among the most prized possessions of peoples fortunate enough to have it. We in the United States still have much highly productive land that is not under cultivation. However, we have much that has broken down under our systems of management and needs maintenance, repair, and improvement. It is no longer a natural resource in the original sense but rather a resource to be husbanded with consideration of the needs of our people and its production potentials.

The past quarter century has seen a revolution of thinking and action in the care of our land resources. The ingenuity of people and government are being allied to get results under our democratic ways. Every step is challenged by the rigidity of our cul-

tural status. Every new research finding must be tested by farmer experiences and win its place in the minds of men.

The gradual decline of land productivity has been an insidious thing because of its almost imperceptible change from year to year. Each generation tends to accept lower yielding capacities and problems of land management as normal. This condition has been aggravated by the lack of good farm records and dependable observations which would reveal the problems. The rebuilding process appears to follow a different pattern in that striking results in increasing productivity of most lands may be obtained in a few years.

This rebuilding, repair, and improvement of the agricultural land will be done when our people every-

where come to understand the meaning of conservation. The Soil Conservation Service in a policy statement says, "Soil conservation has come to mean proper land use, protecting land against all forms of soil deterioration, rebuilding eroded and depleted soil, improving grasslands, woodlands, and wildlife lands, conserving water for farm and ranch use, proper agricultural drainage, irrigation, and flood prevention, building up soil fertility, and increasing yields and farm and ranch income. Modern conservation farming includes achieving not only these objectives but also efficient, abundant production on a sustained basis for the national welfare." One of Extension's opportunities is to help extend an understanding of soil and water conservation.

### *Tell It Well*

Although we have come a long way in the spread of public interest in land, the application of soil conservation to the land is reported on only about 30 percent of the acreage needing it. Much remains to be done. Educators, businessmen, and government personnel are concerned that every one has a stake in how well



conservation is done. Perhaps urban people have the least understanding of the importance to them of productive land resources. This is especially significant because of the preponderant population in urban areas as compared to that on farms.

It is well for us to consider the tools available for moving ahead with soil and water conservation. Among them are education, crop controls, technical assistance, credit, tax deductions, cost sharing, and watershed legislation. Full use of these tools requires an understanding of their application to particular farm family situations. Farmers who adopt recommended soil and water conservation practices are more appreciative of these tools today than ever before.

As farm and home planning work is carried forward by the Cooperative Extension Service, it is likely that it will reveal the critical nature of the land and water factors in the management problems in low-income areas. Experience indicates that adoption of recommended soil and water conservation practices is often the key that unlocks other opportunities.

### *Under New Management*

In a similar way attention to rebuilding and improving land resources may be one of the easiest ways in which young farmers can become landowners and operators. Depleted land, with good inherent productivity, when available at reasonable prices can be treated in an orderly way under a good plan and, in a surprising number of instances, not only become a sound operating farm unit but also contribute its full share to local governmental costs and local business. It is probable that many of the so-called wornout lands will become, under "new management," homes of prosperous and happy farm families.

### *Conservation Costs*

According to an estimate, the value of farmland in the United States in 1954 was 65.6 billion dollars. The maintenance of this land at a high degree of efficient productivity will require increasingly larger investments in many items such as fertilizers, drainage systems, irrigation, seedings, and cultural treatments.

This is true partially because of depleted natural fertility and the economic need for higher levels of crop production. The size of the financial returns to the farmer and rancher from wise investments of this kind are as yet not fully understood by the farmer or public.

The additional cost of food to the consumer as a result of the increased costs of land maintenance generally is not taken into account in determining food prices. The investment in goods and services to keep the land plant of the United States in good running order is destined to be one of the important factors in maintaining a vigorous national economy.

### *Personal Satisfaction*

Many would agree that other important values are involved. They point out that health and happiness are also tied closely to the land. The availability of clean potable water is important. Well-stocked fishing streams, lakes, and ponds are attractive to many. Green-clad hills with the curved lines of contoured fields appeal to the sense of beauty. Wooded areas on the land too steep to cultivate vary the landscape and offer refuge and food for wild animals. All these and more are possible only with intelligent use and care of the land, and they contribute directly to the happiness and welfare of people.



Children in elementary classes of urban schools in Trail County, N. Dak. are taught soil conservation.

## **Congratulations to the Forest Service**

CONGRATULATIONS to the United States Forest Service on the occasion of its Golden Anniversary—February 1, 1955.

The performance of the Forest Service these past 50 years has been characterized by superb service to the American citizenry. The Forest Service is well known for its three-fold activities, cooperation with the States and with private landowners, forest research, and stewardship of the national forests.

The Extension Service, federally and statewide, is thoroughly cognizant of the splendid cooperation the Forest Service has extended to all Federal, State, and private agencies, and with private landowners themselves. Most obvious in this regard are the multitude of forestry publications, both technical and popular, which the Forest Service has made available to all who seek the information, to say nothing of the numerous visual aids, motion picture films, and other materials and technical assistance ready for the asking. An important cog of the State extension forestry program is the Forest Service cooperation among States in the tree-distribution program.

In the field of forest research, the Forest Service enjoys international prestige. Research findings have been the backbone in the development of forestry subject matter so necessary in carrying out programs among landowners and industry.

In the administration of the national forests the Forest Service has with extreme tact carried out the admonition of the then Secretary of Agriculture James Wilson when on February 1, 1905 he said these public forests should be managed for "the greatest good of the greatest number in the long run." The success in this regard is exemplified in last year's National Forests report on 25 million visits by persons seeking outdoor recreation.

Yes, the Extension Service is proud to be a colleague of the Forest Service in the U.S.D.A. and congratulates the Forest Service for a half century of work marvelously done.



**W**ATER USERS of the city of Baltimore, Md. and farmers in the watershed area have a common interest. People in Baltimore need the water from the watershed, and the farmers need the land that washes away into the reservoirs and harbor. The problem of siltation and sedimentation has been serious for this city.

Not only has sedimentation interfered with transportation in the harbor, but for many years it has seriously interfered with development of a dependable water supply.

Baltimore's first water supply reservoir, Lake Roland, was built on Jones Falls in 1862 with a capacity of 400 million gallons. Within 10 years the city was forced to begin sediment removal. By 1900 it was necessary to dredge more than 435,000 cubic yards from the lake at a cost of over \$83,000. The reservoir was finally abandoned as a source of water supply in 1916.

In 1881 the city constructed a second reservoir, Loch Raven, on Gunpowder Falls at a cost of \$321,000. Although 500,000 cubic yards had been dredged from the reservoir between 1896 and 1900, the original storage capacity of 510 million gallons was reduced to 78 million gallons by 1900.

Dredging of the reservoir continued up to 1912, by which time an estimated 2,200,000 cubic yards altogether was removed at a cost of \$400,000. In 1912 a new and higher Loch Raven Dam was started. This dam was raised in 1922, and in 1933 another large reservoir was created upstream by the completion of Prettyboy Dam.

To show folks how the problems of the Baltimore City water supply are closely associated with soil and water conservation on farms in the watershed area, a tour was held last summer. About 100 people got a firsthand impression of what siltation can do when Baltimore County Agent H. B. (Hobby) Derrick gave his talk right in the middle of Paper Mill Road bridge, which spans the upper part of Loch Raven reservoir. This is the main reservoir in the Baltimore City water system. Mr. Derrick explained how siltation affects the water storage capacity of the reservoir.

Nature couldn't have cooperated

## *City folk and farmers study*

# Source and Control of Water



Facing Paper Mill Pond, a part of Loch Raven Reservoir, a group of Baltimore County residents see the real and the photographed evidence of siltation that resulted from lack of soil conservation.

better with the veteran Extension worker. A hard rain had fallen in Baltimore County between 2 and 4 a.m., 9 hours before the group assembled on the bridge. Soil was being carried into the reservoir in swirling torrents.

To illustrate his talk, Mr. Derrick exhibited three Soil Conservation Service photographs taken of that part of the reservoir in view of the group. One of the photos was taken in 1938, one in 1943, and the other in 1952. They showed the progressive buildup of silt in the reservoir.

Mr. Derrick explained to the group how the siltation, which was already very obvious in the 1938 picture, had greatly increased by 1943. By 1952, large trees were growing in the soil deposits in this part of Loch Raven reservoir.

County Agent Derrick, who is also secretary of the Baltimore County Soil Conservation District, told his audience that this soil came from farms in the upper section of Baltimore County and that it contains organic matter accumulated over the past hundreds of years. It also includes manure, lime, and fertilizer incorporated into the soil to produce better crops. This is a tremendous loss to farmers.

Louis Ningard, watershed manager for the Bureau of Water Supply for Baltimore City, told the group that with the increase in Baltimore's population, the demand for water also increases. New water reservoirs are being built, but he emphasized that concern with water conservation does not stop at building new water reser-

*(Continued on page 63)*



# The Soil Survey Is Basic

J. G. STEELE

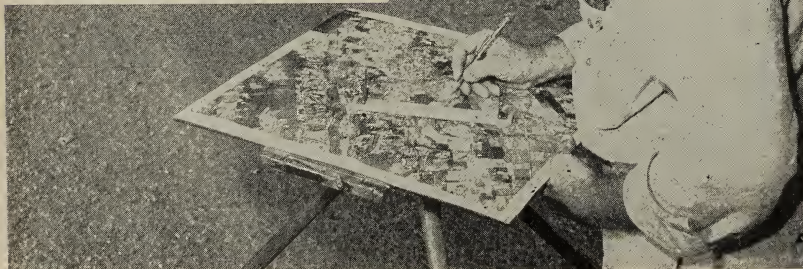
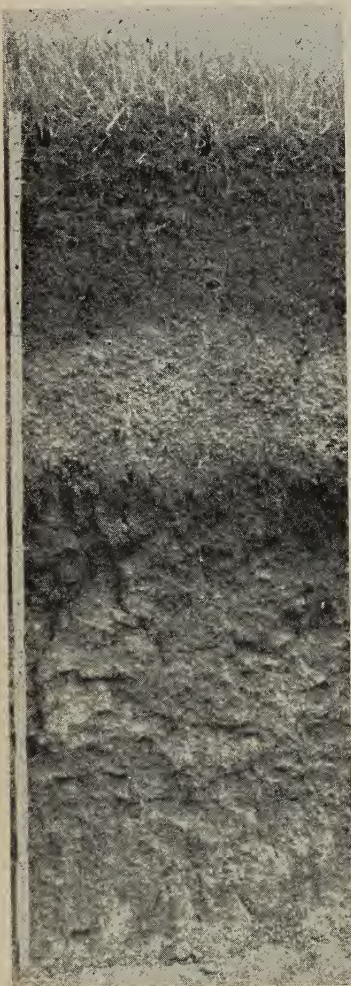
Soil Scientist, Conservation Service, USDA

FARMERS today more than ever before need to know facts about their soils. One farm often includes at least five or six soils, and sometimes more, that differ from each other enough to have different capabilities and potentials.

Some of the differences are easy to see. We know that the soil on a steep slope will erode if we cultivate it without strip cropping, cover crops, or other soil-saving practices. But holding topsoil on sloping land is only one of the goals of modern soil conservation.

We need to select high-yielding varieties of crops, good pasture mixtures, a good fertilizing plan, and tillage methods that keep the soil crumbly and don't let it bake. We

Left, a soil profile.  
Below, a soil map in the making.



need to know how each soil behaves. On some soils, a small amount of phosphate on pasture gives no response, but a heavy application pays good returns. Other soils, perhaps on the same farm, don't respond to phosphate.

We need to know how to drain wet soils, and how soils behave if they are irrigated. The extension agent or the soil conservation technician who advises farmers cannot afford to guess about what the soils will do. He needs the results of experience beyond his own, and so refers to the work of soil scientists, and makes use of soil maps of farms, soil handbooks and technical guides, and published soil maps and reports.

Each farmer who signs up as a cooperator with his soil conservation district receives a soil map along with his farm conservation plan. Usually this map shows, by colors or in some other way, the capability of each kind of soil for longtime use. In many places the soil and land capability map is made by putting lines and symbols on an aerial photograph of the farm. Soil symbols are keyed to the name by which each soil is known, and variations in slope or degree of soil erosion are often shown by extra letters or numbers. The soil name itself is only a useful way to refer to the soil description and the interpretations of what the soil will do.

Soils men of the Soil Conservation Service, with the help of Extension and experiment station personnel, prepare soils handbooks for counties or other local work areas. These are for use until the soil surveys can be completed and published. Each handbook contains the soil-mapping symbols used in the area, description of the soils, soil names if they are well established, and useful facts about each soil. Even in temporary form, the handbook is a useful reference for anyone who needs to advise farmers about how to manage their soils. It is not suitable or available for general distribution.

You cannot judge a soil, and a soil scientist doesn't attempt to describe or even identify one, by looking at the surface alone. It is necessary to look inside, and study the layers that make up the entire soil profile; and

*(Continued on page 63)*





## Byproducts of Farm Ponds

A farm pond (left), properly managed may serve in addition to a source of water for cattle as a recreation center (above) for family and friends.

**T**HE BOLL WEEVIL that invaded Montgomery County, Ala., back in 1914 literally changed the face of the land. Five thousand acres became artificial farm ponds.

The pest caused farmers to turn hundreds of cotton fields into pastures for cattle, and cattle production gave rise to artificial farm ponds.

Such ponds could be tallied 40 years ago. Today they are so numerous there's one or more in sight from almost anywhere in the county. Lem Edmonson, agricultural agent of 37 years' service in Montgomery County, says over 1,400 ponds—possibly more than in any other U. S. county—now pay off in cash and fun and are part of daily living in this area.

### *Cotton to Cattle*

The ponds furnish water for the county's big livestock program, for irrigation, excellent fishing, and help control the water runoff, thus reducing erosion. They range in size from a half-acre to 30 acres and average about 4 acres each. Some 5,000 acres are covered with water.

Mr. Lem, as the county agent is affectionately called, recalls, "Until the boll weevil hit us in 1914, every

farmer lived and breathed cotton. That's about all we had, all we knew. As the weevil took a heavier and heavier toll from our cotton, we had to look for other sources of income. We reduced our cotton acreage and did a better job of controlling the boll weevil, but needed something to supplement cotton.

"Cattle looked like the best bet," he said. "And we went into both beef production and dairying in a hurry. Today the city of Montgomery is called the cow town of the South, and Montgomery County ranks 43d in cattle production among the 3,070 counties of the United States.

"What has this to do with farm ponds? Well, when our farmers started with livestock they quickly ran into water problems. In much of the county, creeks and springs were few and far between. We had to have more watering places if we were to raise livestock.

### *Runoff Water*

"To solve this problem, farmers began building ponds to catch and hold runoff water. As early as 1915 a few ponds were constructed. In the years that followed, the number of

ponds increased faster and faster.

"As research pointed to better pond management practices, the ponds furnished better fishing. Proper construction, fencing, stocking, fertilization, and weed control have resulted in cleaner water for livestock and an important food item of 1,500,000 pounds of fish. That's a conservative estimate. Naturally, more ponds meant more opportunity to fish, and our county has become quite a recreation center."

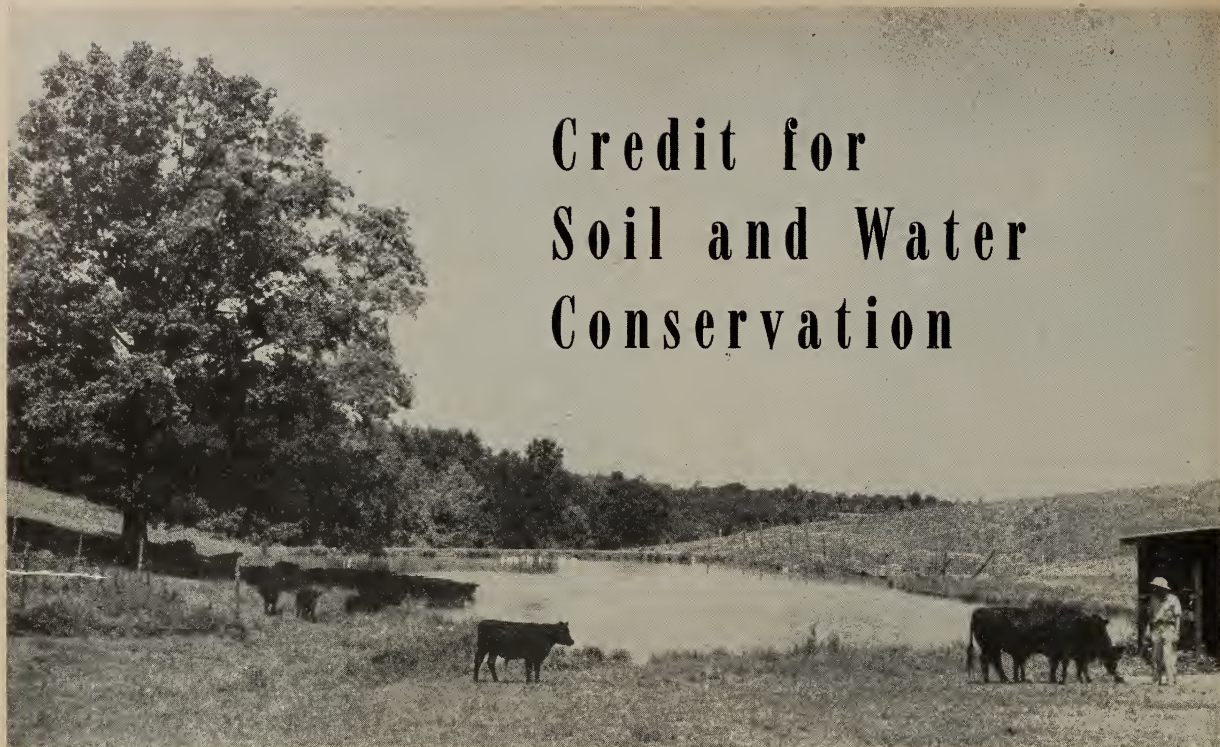
### *For Recreation, Too*

Mr. Edmonson estimates that some 45,000 people in the county use the ponds, including owners and their families and city people who pay fees to fish.

The ponds stay busy in spring and summer. Family picnics and fishing parties seem to be without end. And many a tired farmer or his business-man friend from the city ends the day with a pole in his hand.

Mr. Edmonson says the ponds have a tremendous influence that most people might not recognize. They have done much to bring a better understanding and mutual respect between city and farm people.





# Credit for Soil and Water Conservation

A farm pond like this one protects against drought. Financing may be made through the Farmers Home Administration.

ALMOST every farming community in America has too many unsolved problems of soil conservation, water use, or water conservation on its farms. One major reason has been the lack of adequate financing.

The 83d Congress enacted legislation to help correct this situation. The new law authorizes the Farmers Home Administration to make insured or direct loans to eligible farmers and nonprofit organizations so that they can carry out good soil and water conservation practices.

The loans help farmers improve, protect, and properly use farmland. They provide financing for soil conservation; water development, conservation, and use; and drainage.

Loans will be made to carry out only the types of soil and water conservation practices that are in accord with the recommendations made by the Extension Service and the Soil Conservation Service.

Individuals or associations may use loan funds for such improvements as constructing and repairing terraces, dikes, ponds, tanks, ditches, and

canals for irrigation and drainage, waterways, and erosion control structures. Other uses include sodding, subsoiling, pasture improvement, brush removal, basic lime and fertilizer applications, fencing, tree planting, well drilling, and the purchase of pumps, sprinkler systems, and other irrigation equipment.

The Farmers Home Administration can insure loans made from funds advanced by private lenders up to a total of \$25 million each year. It can also make direct loans up to a total of whatever amount Congress appropriates annually. Whether insured or direct funds are used, the Farmers Home Administration makes the loans, collects the payments, and services the security.

The applicant applies for the loan at the county office of the Farmers Home Administration. The agency's county committee determines the applicant's eligibility.

To be eligible, an applicant must be a citizen of the United States and a farm owner or operator unable to get the necessary credit on reasonable

terms and conditions from private or cooperative sources. Adequate farm experience or training is another requirement. In addition, definite plans must be made to improve a farm on which the operator is primarily engaged in farming.

Nonprofit organizations such as incorporated water users' associations, mutual water and drainage companies, soil conservation districts, irrigation and drainage districts, and grazing associations are eligible if unable to get adequate credit elsewhere and if able to meet certain other requirements.

Individuals can borrow up to \$25,000, but the average application is for less than \$7,000. Association loan ceiling is \$250,000.

Repayment schedules depend on the borrower's ability to repay, but no loan is made for a longer time than the useful life of the security. No repayment schedule for loans to individuals will be longer than 20 years. Association loans are repaid on the same basis except that in ex-

*(Continued on page 62)*



**T**O SPEED UP on-the-farm adoption of conservation practices in Minnesota, the State Legislature voted funds 4 years ago for the salaries of nine soil conservation agents. Each was located in an organized soil conservation district and shared offices with the county extension agricultural agent, working with him and his staff.

This additional service came about through action by the Minnesota Association of soil conservation district supervisors. They were convinced that the practice of conserving water and soil could be increased through an educational program with farm families, who are the ones to make the final decision on putting recommended practices to work.

Here, for example, is how one soil conservation agent operates. Jay E. Ellis, agent in Buffalo, Wright County, some 50 miles west of Minneapolis-St. Paul, started out on a new plan a few months ago, shortly after he went on the job. He planned to bring together a group of farmers for two or three meetings this winter and give them training and facts on soils, farm management, and other conservation related topics.

With the help of the local Agricultural Stabilization Committee and Soil Conservation Service, three farmers from each township were invited to the meeting and most of them came. At the end of the program, Ellis asked the men if they were interested in playing host to small group meetings for their neighbors. Fifteen such meetings are now taking place and the SCS technician and Ellis are attending each one.

Washington County's 1953-1954 program, headed by Soil Conservation Agent Clifton Halsey of Stillwater, emphasized grassed waterways because Halsey found they were needed on many area farms. Grassed waterways were a main topic at 18 winter neighborhood group discussions where Halsey and SCS technicians used colored slides and diagrams to explain how a waterway works and how to plant and maintain one.

Two grassed waterway demonstrations were held by neighborhood farmers with guidance from Halsey and SCS workers. At the Washington County Fair soil conservation booth,

## *Minnesota's soil conservationists are . . .*

# Educator-Expeditors

HARRY R. JOHNSON

Extension Information Specialist, Minnesota

gully erosion and soil loss were demonstrated with soil troughs, grass, and artificial rain as an automatic slide projector portrayed good and bad practices, their reward or penalty.

This program was designed to stimulate interest among organized groups and bring them the conservation story. The whole range of educational tools—meetings, radio programs, demonstrations, films, field days, newspaper articles—carried the grassed waterway message. This year, Halsey is featuring cross-slope farming the same way he hit grassed waterways in 1953-1954. All this is in addition to his regular program of soil testing, tree planting, fertilizer education, and overall farm improvement.

Halsey says, and his experience is echoed by other soil conservation agents, that much educational activity has to take place before farmers begin to use the services of a new soil conservation staff. For a time after the program wins acceptance, there are often more requests than SCS technicians can handle.

"When farm plans are made, some men adopt new practices readily, while others look at the plans and do not understand or like them and file them in the spare-room bureau upstairs," Halsey writes. "Now, most people are sold on conservation, but have yet to put it to work." Halsey and the others are in the big, long push to get conservation practices used.



Nick Weyrens (left), Extension agent for West Otter Trail County, discusses fertilizer needs with John Mulvehill, soil conservation agent, Fergus Falls, Minn.



# The Human Side of Conservation

DR. E. J. NIEDERFRANK  
Rural Sociologist, Federal Extension Service

I FIRST LEARNED about soil and water conservation when, as a small boy, I helped my father put in some small concrete brush dams across a little gully in one of the fields on our farm in northeast Iowa about 1915.

Some of our neighbors laughed at us, especially later in the season when we got tangled up on one of the dams with a corn cultivator. A few years later I forgot about the dams and hit one of them with the tractor and plow. But that was only because they had done such a good job of holding back the silt that the dams were no longer easily visible. By that time we had no gullies in that field but a wide, well-grassed waterway.

In those days, the very idea of fertilizing a pasture would have been ridiculed. Pasture and woodlots were something to be tolerated; they were not main crops. Fields with gullies

or slopes thinned out on top were turned into pasture, not to prevent further erosion but because the land was not good for anything else. Today it's another story.

What does soil and water conservation mean to you? Does it not mean good land care, land management for more income, land use and treatment for maximum total productivity of the farm, managing the crops and land so that the land will have high erosion resistance for greater production? Still more specifically these practices may mean proper fertilizer treatments, grass waterways, terraces, division dams, contour farming, grassland farming on the slopes, cover crops, watershed protection, and many other conservation practices. There is now a rising interest in growing trees and in producing wildlife for sportsmen as compared to the former idea of protecting a shrinking supply. We know that heavy land cover gives greater erosion resistance and protection of water supplies.

All these are examples of positive, specific conservation practices that harmonize with production ideas of our society. When you teach in terms of meaningful ideas and practices, they are more likely to be learned, believed, and followed. The forces of conservation philosophy must be iden-

tified with the forces of production and consumption. At the same time, conservation consciousness is being learned.

Conservation education is effective only as it takes hold in the hearts and minds of people. Folks have to believe it is important; then they have to make it a part of their habits. It has to become a part of family thinking and family patterns of doing. Conservation education is a continuous task, too. Every oncoming generation has to learn the same lessons. And the younger the better.

## For Community Welfare

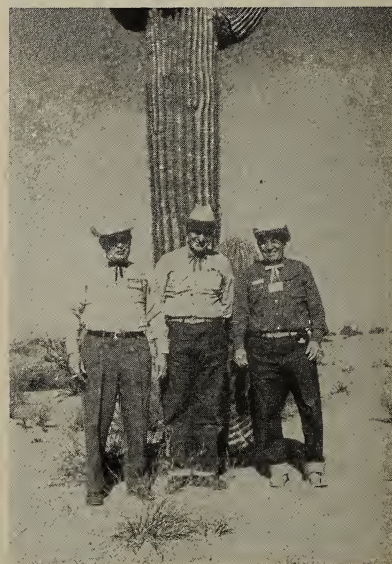
Where the land is neglected, depleted, and eroded, production goes down hill, family income is less, churches and schools decline, community spirit is low, young people move away. But where these same lands are put under proper soil care and management the land builds back, farm income goes up, family living is on a higher plane, community organizations and services succeed, and more young people are interested in agriculture and the home town.

The understanding and practice of conservation is a part of Extension's basic objective to help people lift their whole cultural level. Plenty of evidence exists, not only in this country but from experiences throughout the world, that family and community welfare go up or down in about the same relation that conservation prac-



Seventh grade pupils mulching an eroded area on their school grounds.

Among the guests on a 4-day holiday for Soil Conservation Awards winners were Wendell R. Tascher, USDA, Ken McMicken, General Manager of Litchfield Farms, Arizona, and Donald Settle. See story on page 62.





tices are applied and the land cared for. Human character is affected, too. Responsible stewardship in care of the land often develops character and responsibility. The attitudes of people are reflected in their care of both land and community. Where individuals care for one they also are concerned about the other.

### ***The Educational Job***

It is the job of professional agricultural workers and leaders to reach and teach people to turn conservation ideas into beliefs, practices, and habits. It takes skill and art in adult education.

What are some rules of thumb in the art of teaching conservation? Practically every soil and water conservation practice, no matter how small must be thought of in terms of the family and the whole farm. It will have some relation to one or other parts of the farming operation and family situation, perhaps to field layout, fertilizer treatment, kinds and acreages of crops, crop rotations, sources and amount of income, building uses, machinery, and kinds and amounts of work on the place.

Families must consider members' ages, type of farming preferences and abilities, managerial sense, mechanical skill, ambition and interest, relation to neighbors, feeling of stewardship or responsibility toward land,



## **National 4-H Field Crops Program Revised**

Gerhard Koehler and son, Harry, of Yoakum, Tex., inspect seed pods of soil improving guar. They are working with the 1955 field crops program which has been revised. This year four gold-filled medals of honor are being offered at the county level instead of two. The program deals with the use of land and the

good farming practices relating to efficient field crops production. In almost all counties, 4-H Club members interested in field crops are eager to advance the use of recommended production methods, which relate to sound land-use.

and attitude of the landlord. Before a conservation investment can be made, the family will need to discuss whether or not John should go to college, whether the new running water system can wait, or whether a hospital bill must be paid first.

Families are not easily motivated to conservation practices or adjustments, especially those that call for considerable change in farming op-

erations and habits. They appreciate the counsel that helps them analyze the various phases of their farms and family situations and come to wise decisions.

### ***Motivating Forces***

Every family has some primary motivating values. Some families may be concerned only with maximum current production—the highest yields year by year. Others may have a certain feeling of stewardship responsibility—a feeling about conservation in relation to the next generation, to Nature, and to God. To others, conservation may be a family practice learned from father or grandfather. To some it may also be part of one's pride in the appearance of the farm. Very often neighbor approval is important. In still other cases it is a matter of keeping up with a son who is or wants to be a more scientific farmer.

The Extension teacher must continually discern and be aware of primary motivating values of the people with whom he works—each farmer and his wife, each neighborhood. Then relate conservation appeals and teaching to these values.

### ***Local Leaders Help***

In a county conservation campaign, think in terms of neighborhood, of community, of the natural or in-

*(Continued on page 62)*



Alfredo Rivera, 4-H Club winner in Puerto Rico's soil and water conservation program, has only a yoke of oxen for power, but uses them to plow on the contour and to maintain his contoured ditches.



IT BEHOOVES all of us—research people, field workers, and educators—to remember that we have not done anything really useful until what we have learned reaches the people who make the decisions as to how the soil and water of this country are going to be used.

Extension workers have an extremely important part in the task of conserving and improving the soil and water resources of the Nation. Education based on the findings of scientific research is essential if we as citizens are to make our individual and group efforts effective and extensive enough to meet the challenge that confronts us. We are not yet farming well enough and otherwise using our resources with sufficient wisdom to assure the future security of our country.

In the Soil and Water Conservation Research Branch of the Agricultural Research Service, we are trying to learn which problems are most in need of scientific study and to allocate our research resources to best advantages. Working in cooperation with the State experiment stations, we do both basic and applied research, but in all cases concentrate on principles that can be applied widely. Perhaps the nature of the research can best be told by citing examples.

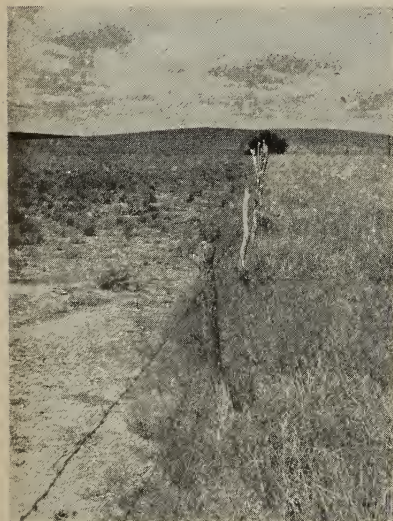
Research on wind and water erosion in the Great Plains has shown



A contrast in farming methods shows the value of contour farming for retaining soil and water.

## *Is the timelag too long before you* **Relay the Results of**

Soil and Water Conservation Research Branch, Agriculture



A contrast in grass management and utilization.

that those tillage methods which preserve wheat stubble at the surface are the most effective. Wheat yields in the drier areas have proved to be at least as high in stubble mulch farming as from conventional plowing methods.

In the Pacific Northwest, wheat rotations that include legumes and grasses are found to permit much less soil loss than alternating wheat and fallow and wheat-pea rotations.

In Colorado, mountain meadow hay yields have been increased from less than a ton per acre to about  $5\frac{1}{2}$  tons, and quality has been improved to a comparable extent, by combining good practices in fertilization, harvesting, and control of irrigation water. Similar results have been obtained with several other crops.

Studies of irrigation water requirements by different crops, recharge of ground water, methods of conveying and applying irrigation water, drain-

age of irrigated land, and salinity control are in progress at various locations in the West. Results from these studies are used in recommending practices for the efficient use of irrigation water.

In Iowa and South Carolina, efforts are being made by teams of Federal and State scientists to find out why crop yields are often cut by mulch tillage and to develop corrective practices so as to permit the use of this effective method of controlling erosion in the humid region.

In Wisconsin one line of investigation seeks better methods to renovate pastures on steep slopes without opening them up to runoff and erosion. Interplanting of grasses and legumes in wide-row corn is being studied as one means of using corn occasionally in steep-land rotations. Problems involved in terracing, stripcropping and the use of cover crops for erosion control are being studied in various parts of the East.





# Research

ROBERT M. SALTER  
Natural Research Service, USDA

Irrigation methods that will be profitable in years of generally normal rainfall as well as in dry periods are sought in studies on when and how much to irrigate, crop and soil management practices geared to irrigation, improvement in design of irrigation systems, and development of water supplies.

## Organizational Responsibilities

The Soil and Water Conservation Branch has two geographic sections, the Eastern and Western Soil and Water Management Sections, which seek to develop improved soil and water management practices; and three sections which deal with principles underlying the development of practices—Soil and Plant Relationship Section, Fertilizer and Agricultural Lime Section, and Watershed Hydrology Section.

Farmers and professional workers in conservation and reclamation are especially interested in the work of

the U. S. Salinity Laboratory at Riverside, Calif. Practical application can be found for much of the information published in 1954 in Agricultural Handbook No. 60, *Diagnosis and Improvement of Saline and Alkali Soils*. Research into salinity problems has resulted in the design of new equipment that can be taken into fields to diagnose saline conditions and thus help farmers prevent crop failures.

Watershed hydrology research includes investigations on natural watersheds at nine centers in Maryland, Virginia, Florida, Ohio, Wisconsin, Michigan, Nebraska, Texas, and New Mexico. The watersheds range in size from a few acres to several thousand. The researchers at these locations study cause-and-effect relations in water yield, peak discharge and infiltration obtained under various conditions of soils, land use, watershed size, and climate.

At the St. Anthony Falls Hydraulic Laboratory in Minnesota, box inlets, straight drop spillways, chutes and other structures employed in the soil conservation program are designed, tested, and improved. Standardized designs are developed. The Stillwater Outdoor Hydraulic Laboratory in Oklahoma is known especially for its work on grassed waterways used as terrace outlets and for other purposes. Permissible velocities of water for

various grasses and soils in waterways have been determined.

If you want to know how fast a reservoir at a certain location would fill up with silt, or if you need to know whether a water detention structure would result in channel cutting downstream, you will want to study the results of our sedimentation research in New York State, Mississippi, and the Missouri Basin.

Manufacturers of fertilizers and officials responsible for standards of fertilizers and liming materials make use of our research in this field.

State experiment stations frequently conduct experiments with fertilizers made from new formulas by this section. Statistics on resources, supplies, production, consumption, and trade relations of all types of fertilizers and liming materials are gathered, analyzed, and published with the objective of increasing efficiency and lowering costs of these materials to farmers.

The Eastern and Western Soil and Water Management Sections are trying to combine the principles learned in production and conservation research with practical experience and adapt them to sound farming practices and systems that will simultaneously make production more efficient and maintain or improve soil resources.



Stubble-mulch farming is a water and wind conservation measure.



Contour furrowing aids in the retention of water and soil.



CHARLES CARLSON, 18, of Pikeview, Colo. is one of 240,000 4-H Club members who have received training in soil and water conservation practices. When 11 flash floods, which start in the mountains and rush down the narrow valley, poured across his family farm in one month, Charles went for advice to the Extension Service and the Fountain Valley Soil Conservation District.

Plowed crops on the farm were eliminated and replaced with alfalfa, sweetclover, brome, and crested wheat-grasses. These permanent pastures were improved by clipping, fertilizing, controlled grazing, and terracing.

Over 50,000 4-H Club members are participating in the 1955 National 4-H soil and water conservation programs. The slogan this year is Save Your Soil—Serve Your Community. The conservation achievements of these young men and women from all over the Nation have served, not only to put into practice the best of conservation measures but also, to influence thousands of rural neighbors to do the same. Charles Carlson was one of the 1954 national winners in the 4-H soil conservation program.

The objectives of the 4-H conservation program in addition to developing leadership, character, and effective citizenship, are: (1) To know the social and economic values of soil in their lives and to the Nation; (2) To learn through 4-H Club work how to successfully conserve soil and water; (3) to cooperate in the farm family program of soil and water conservation for present and future production; (4) to prevent soil waste and deterioration on the farms and in the communities; and (5) To work together on a program important to community, State and national welfare.

John W. Stutts, 19, of Rienzi, Miss., also a national winner, started his soil conservation project when he was 13. At that time, his father died and John was faced with carrying on the operation of the 223-acre farm. The first year he checked erosion on 5 acres by putting cedar trees in deep gullies and starting terraces. He also began reforestation on a 23-acre timber tract.

In subsequent years, he built 5,000 feet of terraces on the 160 acres of crop land, and planted pine seedlings and kudzu on nontillable land. In



Scholarship winners of the National 4-H Soil and Water Conservation program are photographed with Raymond C. Firestone, donor.

## “Save Your Soil... Serve Your Community”— the 1955 4-H slogan

HAL ALLEN

Associate Editor, Information Service  
National Committee on Boys and Girls Club Work, Inc.

1952, he had the farm surveyed for 7,000 feet of additional terraces and another farm pond. Nine acres were drained by ditch.

Last year, 5 acres were subsoiled for summer pasture, which paid off despite the drought. Lespedeza was started, fire breaks established, and 8,000 pine seedlings were planted in 1954. John's work has impressed many of his neighbors, who have followed his lead in carrying out conservation practices.

Seven years ago, Norman E. Tucker, 20, of Lanesboro, Mass., another national winner, began his soil conservation program when the family moved to a badly rundown 200-acre farm. He and his father, working from aerial photos and maps supplied by the local soil conservation office,

made cropping plans which called for greatly increased forage production. They have seen the capacity of the farm for dairying increase from 10 cows in 1947 to 65 head of dairy stock in 1953.

These are just a few of thousands of examples of how 4-H Club members participating in the soil conservation program are saving their soil and serving their communities.

An unlimited horizon looms for the rural youth of America. Through the 4-H soil and water conservation program conducted by the Extension Service in cooperation with local volunteer leaders and other “Friends of 4-H,” they can “Make the Best Better,” while they live up to the slogan, “Save Your Soil—Serve Your Community.”



Learn about it  
Talk about it  
Practice it . . . .

## *Women Spread the Word on Conservation*

TOMMY WILKERSON

Assistant Extension Editor, Mississippi

CONSERVATION of today's natural resources insures that they will be here tomorrow.

Realizing that the problem today is lack of conservation, Mississippi's more than 42,000 home demonstration clubwomen have joined in the task of educating both urban and rural dwellers in the need for conservation.

Some of the methods adopted by the enterprising women include conducting tours, using radio and newspaper outlets, and holding meetings and demonstrations. They also make use of other organizations including community clubs, civic groups, and 4-H Clubs and other youth groups.

Women in Webster County, Miss., did more than just talk about saving the soil. During Conservation—Land-

Use Emphasis—Week last April, more than 60 of them, representing 14 home demonstration clubs, went on a land-use tour. Husbands of about half of the women also went.

"V" type ditches and contour farming on steep land, forests properly managed, modern farm ponds, and field borders of multiflora rose were just a few of the sound conservation practices observed by the group.

Last August, Humphreys County home demonstration women accompanied the local soil conservationist on a pasture tour during which they observed proper land-management methods.

"Woman's responsibility in promoting soil and water conservation is the same as her job of promoting the adoption of any necessary farm

or homemaking practice," declared May Cresswell, former State home demonstration agent.

Home demonstration clubwomen make conservation an integral part of their club program structure. Each club has its conservation chairman, as does each county council and the State Home Demonstration Council.

In a report at the National Home Demonstration Council meeting last fall in Washington, D. C., Mrs. Zack Whisenant of New Albany, president, Mississippi Home Demonstration Council, stressed the activities during the annual conservation week.

"More than 68,000 attended demonstrations on conservation. Our club participation was 100 percent for the second consecutive year. In addition, our members reported on more than 1,300 conservation study topics," Mrs. Whisenant pointed out. "We also arranged for nearly 600 sermons to be preached on conservation and assisted with the preparation of more than 350 news stories."

Extension Soil Conservationist Charles R. Ashford, says of the women's work in conservation: "We have gone much farther during the past 2 years with their help than we would have in many more years without it. The women first figure out what they want to accomplish, then how and what it will take to reach the goal, and then they do the job."



Sixty home demonstration club members of Webster County, Miss. learn approved methods of soil and water conservation on a tour during Land Use Emphasis Week.



# Farm Planning Trials

*Conducted by Soil Conservation Service and  
Extension Service in four States*

A. M. HEDGE

Chief, Farm and Ranch Planning Branch, Soil Conservation Service

COOPERATIVE TRIALS in farm planning and development have been in operation for 2 years on approximately 60 farms in Montana, Texas, Wisconsin, and Washington. The families on these farms have been cooperating with the Soil Conservation Service and the Extension Services in their respective States.

In one soil conservation district of each State except Washington, an SCS conservationist and Extension specialists in farm and home management worked as a team in helping a group of 10 to 20 families develop complete farm and home plans. In Washington, a former county agent, Marion Bunnell, became a joint employee and was responsible for all field contacts with the families.

The objectives of these trial farm plans were as follows:

1. To test various approaches to the problem of supplying the kind, amount and intensity of help needed and desired by farm families in developing farm and home plans.

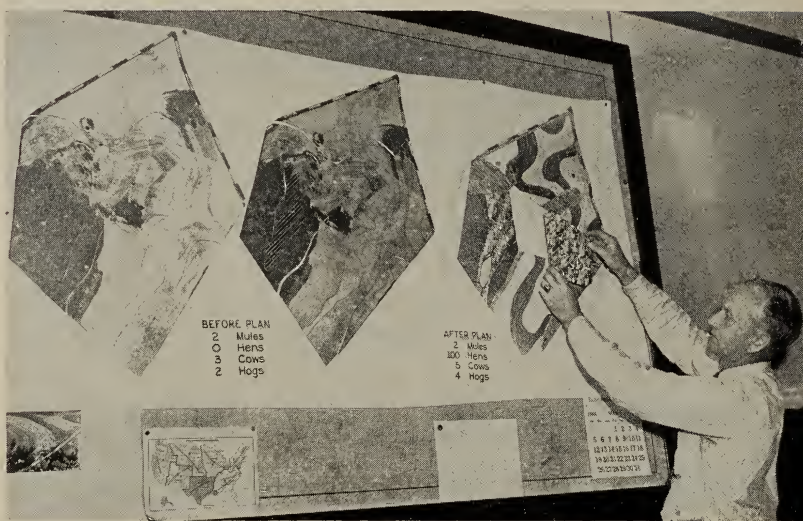
2. To develop ways and means of collecting and "packaging" practical farm management information that would be useful to professional people and farmers in developing farm and home plans.

3. To illustrate to Extension workers the basic importance of considering the conservation problems inherent in using soil, water, and plants.

4. To devise ways and means of imparting to SCS workers a better appreciation of the farm management aspects involved in conservation planning.

In each of the soil conservation districts where these trials were operated the proposal was explained to the district governing body. Their concurrence and support were secured.

From 10 to 20 families who expressed a willingness to cooperate



A. M. Hedge, Chief, Farm and Ranch Planning Branch, SCS, demonstrates by flannel graph basic conservation farm planning.

were selected in each district. An effort was made to select families who needed planning help, who appeared most likely to cooperate fully, and who operated farms on which there was a possibility of developing successful alternative enterprises. In addition, an attempt was made to secure farms for these trials that were representative of a considerable portion of the districts. Owner-operated farms as well as tenant-operated units were included.

The first step was to assemble all available research information relating to costs and returns from various practices and establish a schedule of prices that could be used in making budget analyses of farm businesses. It was also necessary to establish the yield responses to various practices prevailing in the district and under various levels of management. In

this work specialists from the experiment stations and colleges assisted. Where research data were not available, local experience and observations by technicians experienced in the area were combined with the judgment of district supervisors and other farmers.

After the necessary technical tools had been assembled in each district, the planning team met with the families who had agreed to cooperate. The farm management specialist obtained information from each family regarding their farming business. Crop and livestock production, volume of sales, expenditures, and inventories of buildings, equipment, and livestock were among the items on which information was collected. At the same time he discussed with the family their desires and preferences as to farming enterprises and systems of farming. He also found out



about improvements or changes being considered by the family. If a home demonstration agent was a member of the planning team, she also got similar pertinent information about the home.

While the farm and home business information was being obtained, the SCS technician prepared a complete soil map for the entire unit. With this information the planning team proceeded jointly to develop as many alternative farm plans for each farm as appeared to be practical and feasible in the light of the soil resources available and the desires and financial resources of the families. Each alternative plan was subject to a budget analysis, and information was prepared to show the probable costs and returns from each plan.

When this kind of information was available, the planning team met with each family and carefully explained the possibilities and the probable economic returns from the available alternative plans. Such information was usually left with the families for their study. With some families it required two or three discussions before they were able to make a firm decision as to the kind of farm plan that would be best for them. Sometimes none of the original plans suggested by the planning team was wholly satisfactory to the family, and changes had to be made.

Once a farm family had reached a decision as to the kind of farming system they believed would be best for them, after considering all practical alternatives, the planning team proceeded to develop that plan in detail. Such plans were based on the soil and capability maps of the farms. They included complete landuse maps, cropping systems, livestock programs where applicable, soil fertility programs, soil and water conservation practices, marketing plans, and financial requirements. Where a home demonstration agent cooperated, home improvement plans were incorporated in the overall plans.

When the complete plans were developed in a manner acceptable to the family, technical assistance in carrying out the plan was made available. A good set of farm account records was set up, and the cooperating families were assisted in getting started with them.

It is too early to evaluate the worth of farm and ranch plans developed during these trials in terms of value to the families who cooperated. In no case are the plans completely carried out as yet. When these plans have been installed and records have been kept for a few years, it will be possible to appraise the effectiveness of this activity.

Technical assistance will be provided the families in these trials until their plans have been carried out. Experience gained in these trials and lessons learned from close followup with the cooperating families during the next few years are expected to provide many helpful guides in further improving the assistance provided by both SCS and Extension.

## Young Outdoor Americans

*Hear about*

*4-H conservation activities from*

LOIS ANN MOODY, Ohio

“FOR TRULY the earth is the Lord’s in the fullness thereof, but the responsibility for its stewardship is vested in man.”

With this quotation, Lois Ann Moody from Roseville, Ohio, representing the 4-H Clubs, introduced her talk to a meeting of Young Outdoor Americans last March when they met in Chicago. This was a first conservation planning conference for the Izaak Walton League of America, Young Outdoor Americans, and 4-H Clubs. Excerpts of Miss Moody’s talk follow:



4-H Club members study the variety of soil samples in plots testing fertility.

“In Ohio, the 4-H projects which deal with soil conservation and wildlife are: Our outdoor neighbors, our birds, our insects; saving soil and water; farm mapping, soil testing, and pasture. These projects emphasize nature appreciation and the interdependence of soil, water, plants, and animals. During 1953, 28,811 4-H members in Ohio carried these conservation projects.

“Under the forestry program are projects called woodcrafters, tree planting, windbreak, and tree nursery. The purposes of these projects are to introduce to 4-H members the study of forestry and to help young people understand how trees play a part in the uses of land, erosion control, crop returns, and benefits to wildlife.

“A total of 892 club members completed forestry projects in Ohio 4-H Clubs in 1953; 6,919 participated in related projects of crops; and 21,000 carried livestock projects which are also related to conservation.

“On a nationwide scale in 1953, 20,791 boys and 3,299 girls were enrolled in specific soil and water conservation projects. The Extension Service reports that in 1953 about 200,000 4-H boys and girls received training in forestry.

“This 4-H Club work will, we are sure, contribute to the fullest use of our natural resources and benefit both the city and rural people.”



An attention-getter, this sign "Greener Hills" was spelled out by 4-H members on a barren Wetzel County, W. Va., hill with superphosphate and lime.

*See the  
results of  
9 years of*  
**Soil**

## Conservation and Improvement

KATHLEEN E. STEPHENSON  
Home Agent, Wetzel County, W. Va.

FOLKS in Wetzel County, W. Va., have no trouble seeing the results of the 4-H conservation program. It was started 9 years ago when the club members planted a memorial forest at the Wetzel County 4-H Camp to honor 4-H members who served in World War II. The tree planting has sold not only boys and girls on the values of conservation and land improvement, but many farmers as well.

When the Wetzel County Agricultural Council launched Conservation Week in 1947, 4-H Club members fell right in line. They still use the slogan, "Long may our land be green."

Special activities of that first Conservation Week included an essay contest, using the theme, "What conservation means to me, my home, and my community." In the soil conservation contest, each contestant prepared a map of his farm to show it as it was, and one of the farm as it should be. Each participant also carried out three soil conservation practices.

In 1948, the contests were again sponsored by civic organizations and the essay theme was "Trees for tomorrow." Club members also appeared on the forestry forums that were held in various communities.

During the 1950 Conservation Week in Wetzel County, 4-H Clubs were responsible for observance of Conservation Day in the school. Members again took part in an essay on the subject, "Green Hills—Our Heritage."

Then came Conservation Week, 1951, which featured 4-H Club Day. This called for all county club members to meet on Saturday noon to hear the National Farm and Home Hour broadcast by NBC, in which a 4-H girl from Wetzel County told about our conservation activities. After the radio program, each club discussed and selected its conservation project for the year.

Other activities in 1951 included making 2 signs to put up in various sections of the county. They read: "Greener Hills for Wetzel County—Grow More Grass and Trees." The project of painting and placing these signs was done cooperatively with the Young Men and Women (YMW).

For the past 3 years, the 4-H Clubs have worked jointly with the YMW group in planting the roadside entrances to the county. The YMW members financed the project, and most of the planting has been done by 4-H members.

Other conservation activities include the observance of Arbor Day

each year; a special Conservation Day at 4-H Camp, and a discussion on some phase of conservation at the annual 4-H convention. Every year, from 20 to 30 members plant Christmas trees. Last year 72 boys and girls carried out conservation projects.

I sincerely believe that the results of the conservation work done at county 4-H camp have helped much to sell conservation to many farm families, not only in Wetzel County, but likewise in surrounding areas.



4-H Club members practice what they preach on "Spruce Saturday."

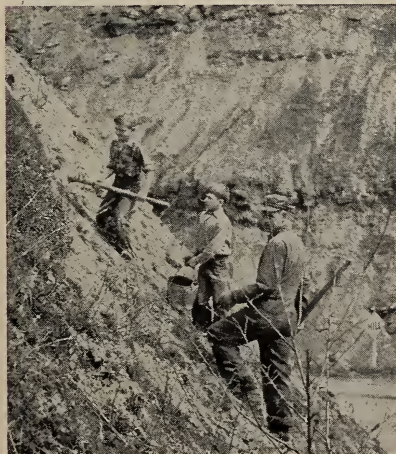




Shrubs are planted to beautify and hold the soil on forgotten lots.

SOIL AND WATER CONSERVATION practices have been one of the principal reasons why commendable progress has been made by farm families in Macon County, N. C., over the last 20 years.

Farm families in this county first became interested in the conservation of land and water through the Tennessee Valley Administration Demonstration Test farmwork. First a few pilot unit test farms were established. Later more unit farms were added and one watershed-area demonstration started, participated in by about 60 farm families. At one time there were as many as 130 unit-demonstration farms and 5 watershed-area demonstrations in the county.



Young 4-H'ers learn to plant trees on steep slopes bordering the highways.

## *Good land use*

# *Adds Dignity and Dollars to rural living*

T. H. FAGG, County Agent and  
MRS. FLORENCE SHERRILL, Home Agent,  
Macon County, N. C.

These unit farm and area demonstrations were organized mainly to show how soil and water could be conserved through correct soil, farm, and home management practices.

In the early thirties, very little fertilizer was used in Macon County, and little attention was paid to the method of cultivation of the land. Macon is a naturally mountainous county and farmers up until the early 1930's followed a practice of row cropping both bottom lands and hillsides. Some of the first demonstrations were the grassing of hillsides for pasture and hay crops and pulling the row crops down on the less steep slopes to reduce water runoff and erosion. To establish and maintain grass sods on hillsides, and even on bottom lands, it was necessary to use phosphate, lime, and balanced fertilizing materials to get the growth started.

Now there are only 34 of the unit demonstration farms in the county and no area demonstrations. Our rural people, both men and women, have learned one or two lessons well. The first of these is that if one wants to accomplish anything in the community, he must first be willing to experiment and to demonstrate for others what he has learned through experience. A second lesson is that the soil is our greatest heritage and it is our responsibility to conserve the soil and use it wisely. Two hundred and twenty-five Macon County farm families are cooperating with the local soil conservation district in carrying out their conservation farm plans.

From the few simple demonstrations in the early thirties and through

wise community leadership, excellent cooperation by the people with Extension and other agricultural agencies, the rural farm families of Macon have produced a new look in the county. The fields are green with Ladino-grass pastures, alfalfa, and other approved forage crops. Hillsides are grassed instead of row-cropped. There are 42 Grade A dairies instead of 2. Excellent beef herds are in evidence. Purebred animals are appearing instead of scrubs. Poultry numbers, for commercial purposes, have increased from practically none to approximately 150,000 birds.

Twenty-one organized rural community development areas are working throughout the county to improve the standards of living of farm families. Since 1930, when there were very few rural homes with electric current, 95 percent of Macon County farms and homes have been electrified. This electricity is being used, not only for lights, but also to operate various farm and home electric appliances, such as hay dryers, milking machines, home freezers, and washing machines.

During the past few years the roads have been improved, marketing situations bettered, and new churches, new and remodeled homes, community buildings, and picnic areas have been built. Home grounds are being beautified, farm buildings improved, and educational facilities increased.

This interest in and enthusiasm about rural progress are not confined to the rural people alone, but have spread to the business people of the county as well. The businessmen now sponsor a community development contest each year.



## 4-H Conservation Clubs

AL BOND

Extension Editor, Washington



Members of Garden Springs 4-H Club plant the garden for the Annis family.

ANYBODY who questions whether the future of the country is safe in the hands of the younger generation would have known the answer was yes after watching a group of older 4-H boys and girls plan and conduct a Young Farmers' Conservation Day in Spokane County, Wash., last May.

The Spokane County 4-H Builders Club, a countywide organization of members 15 years and older, carried out a big project on the Warren Annis farm in the North Spokane Soil Conservation District. They took over the job as a community service and brought almost everybody into the act before they were through.

The plan really started in 1950 when Mr. Annis asked County Agent Hilmer Axling if the soil conservation district could help him develop a conservation plan on his farm. A soil survey showed most of the land was eroded and low in fertility. It could be improved, but it would take a lot of work. Annis, who was in the air force for 7 years during the World War II period, had attended veteran's agricultural classes for 4 years. The Annis' farm includes 200 acres, of which 95 are tillable, 23 had been abandoned, but were partially restored by the 4-H members, and 142 acres are in woodland.

Having heard that other States staged a Young Farmers' Conservation Day, Mr. Axling suggested the idea to the 4-H Builders Club. Members were enthusiastic and requested a \$550 allocation from the Sears-

Roebuck Foundation, then called upon the Cooperative Extension Service, Soil Conservation Service, and the Veterans Administration for advice. When the general project was decided on and a location established, various Builders' Club committees were appointed. The youngsters planned the work, decided who would do it, and scoured the community for further donations of materials and equipment. Many business firms were sold on the project by the club members themselves.

They enlisted the help of local newspapers and radio stations in publicizing the event. The result was that 450 people showed up.

The young people worked on 14 projects during the day. These included seeding and fertilizing 7 acres of hay; stabilizing and seeding a grassed waterway in what was originally a gully; developing a spring for

stock water and for wildlife; installing 363 feet of drain tile; pruning and spacing trees in the farm woodlot; landscaping the farmstead and planting a vegetable garden; leveling the barnlot next to the loafing shed; constructing a pole-type hay barn; building fences; painting the farm buildings; painting the kitchen and improving the kitchen work areas; finishing a bathroom and reupholstering a chair. The barn-raising was done by members of the local Grange.

The event proved that 4-H Club members are capable demonstrators and planners. It helped to sell conservation and 4-H Club work to a metropolitan community, and it gave the Annis family a real boost up the ladder of farm success. Mr. Annis said that the work had put him about 3 years ahead and that it demonstrated that three Government agencies can cooperate in a local project.



Members of the 4-H Builders Club, H. L. Axling (center), and W. R. Spencer (right), SCS area conservationist, pose in front of Annis farm map.





Grass and trees protect mountain watersheds, the source of most water supplies in the West.

*It takes dedicated men  
to fight*

## Mud Rock Floods

ALLISTER F. MacDOUGALL  
County Agricultural Agent, Middlesex County, Mass.

COUNTY EXTENSION agents and their wives met from all over the United States met in Salt Lake City the week of October 10 for their 1954 convention. Modestly listed at the end of an excellent program was a tour of Davis County Mountain for those who wished to attend, weather permitting.

We had heard a little of the spirit of the pioneers who crossed the mountains and rode down the canyons to settle in this peaceful valley and overcome its obstacles. We had been impressed with the fact that the whole valley was dependent on the mountain streams, created from melted snow and fall and spring rains, for its drinking water and water for irrigation. Otherwise, the valley would be the dry barren waste as found by the first settlers. But little had we heard of the modern pioneers, who were even now fighting the perils of man-created hazards that lay back

in these same canyons and mountains, and what has been done to control the power behind melting snow and summer rains.

County agents up and down the valley had joined with men of the Utah Agricultural Experiment Station and the United States Forest Service to show us what was being accomplished in overcoming the dangers of mud rock floods and the conservation of soil and water so essential to the growth and development of their beautiful valley.

This story cannot begin to tell of the factors that created the dangers from loss of water, the floods, overgrazing, and the loss of soil, property, and even lives. This is all well told in a bulletin entitled "Guide to Davis County Experimental Watershed" written by R. B. Marston of the Forest Service, Ogden, Utah, printed last year and given to everyone on the tour.

It cannot tell of the great accomplishments since 1930 starting with the local people organizing a flood control committee, the establishment by the governor of a flood control commission, and subsequent cooperation all the way from the local people to the halls of Congress.

Traveling in cars and trucks and stopping first at the mouth of Parrish Creek where rock and debris were scattered over fertile valley land caused by the mud rock floods in 1930, we had a chance to see right before us the obstacles that these Utah modern pioneers were trying to overcome. Rocks weighing up to 100 tons, cellar holes where once stood happy homes, the mark on the schoolhouse where the old walls met the new, walls rebuilt after water, soil, and boulders had torn away part of the building, and acres covered with rocks and gravel, all mutely told the story of the mud rock floods.

Realizing that this was an example of what could happen by overgrazing, abuse of ground cover, and disregard for the laws of nature not only in this creek and canyon but in other watershed areas within the Wasatch Mountains National Forest, one began to appreciate the importance of all the research and demonstration work that we were seeing. Being told that the upstream improvement measures had been effective in preventing additional floods since they were established in 1934, made us all the more eager to take this trip back into the mountains and see firsthand what had been accomplished.

Climbing the mountain road cut into the sides of the canyons we observed the debris basins; masonry flumes to measure stream flow; concrete-lined pits for studying the amount of water that is evaporated from the soil mantle and the amount that is available for stream flow; the various kinds of ground cover from grasses to herbs and aspen trees; contour-trenched slopes; and then the experimental plots to measure the effects of plant cover on storm run-off and erosion. These gave a minute picture of the imagination, the dreams, the blue prints, and the great amount of brain work and brawn that have gone into this watershed project.



## The Human Side

(Continued from page 51)

formal leaders. When an idea has group or community backing, it will often take hold easier and last longer. Make sure that the leaders and key persons with whom you work have influence with the families or sections of the county you want to reach. Practices they adopt will readily spread to others. These practices will then have become the desirable, the accepted thing to do; they will have group or community backing. There is no greater motivating influence, pro or con, than the influences of one's friends and neighbors.

The development of community or small action programs is spreading widely. Adult educators tell us that people learn more and do more when they discuss and help plan the action and choose their own leadership.

County program planning based on local facts studied by the people themselves offers opportunities to relate conservation to the total extension program and to various agencies and for more advanced leadership among the people. Good program planning is teaching already half done.

Much interest and leadership for conservation have been developed among farm and town people during the last 20 years. Billions of dollars have been spent by agencies and much technical know-how has been developed. But accumulative leadership will continue to be just as significant a resource for further work on conservation as will additional financial and technical resources. We should continually recognize it, both in our planning and in our teaching.

Many people think of conservation as meaning to save this or that, or as having a somewhat negative connotation. Whereas the genius and interest of the American people are to be found, not in self-denial but in production; not in saving but in having and consuming. Our culture gives weight to a position of action, risk taking, high production, more income, personal achievement, and current success. Every teacher of conservation needs to recognize this and teach conservation in terms of positive, specific conservation practices and ideas, as well as in terms of conservation philosophy.

## The Soil Conservation Society of America

The Soil Conservation Society of America is dedicated to advance the science and art of good land use. Here the educator, technician, researcher, and administrator from all fields relating to land use, join with the business, industrial, farm, and organizational leaders to find a common meeting ground.

Through membership of professional and practical conservationists the Society has grown to maturity in the postwar era. Members have the opportunity of sharing information, experiences, and fellowship through chapter, State, and national meetings.

The Society publishes the *Journal of Soil and Water Conservation*, now in the 10th volume. Here, in readable form, technical and practical information is contributed by members and other leaders. It is obtained through membership in the organization which is open to all conservationists. Through membership in the Society the individual lends his influence in an organized approach to advance the objectives for which it stands. Support of the Society will strengthen its prestige as well as its activities.

Governed by a council of 5 officers and 8 council members, elected by the 6,500 members, the Society carries forward its work through 77 local chapters. National committees have produced many useful documents, including the first soil and water conservation glossary, a popular booklet known as *Down the River*.

National headquarters are at 1016 Paramount Building, Des Moines, Iowa.

## Holiday for Winners

Officials of Soil Conservation Districts that receive national awards from the Goodyear Tire & Rubber Co. win a vacation trip to Goodyear's Litchfield Farms in Arizona. This is the eighth year these awards have been made, and each year over 100 grand prize winners representing all States are entertained at Mr. Litchfield's desert home.

Any district may enter the contest by writing to Soil Conservation Awards Program, Department 712, Goodyear Tire & Rubber Co., Akron 16, Ohio.

## Credit for Conservation

(Continued from page 48)

ceptional cases they can be scheduled up to 40 years. A borrower must re-finance the unpaid loan balance when he can get a loan at reasonable rates and terms from other sources.

The Government's interests are protected by the best lien obtainable on chattels or real estate.

The applicant must comply with his State's laws or regulations pertaining to use or appropriation of water. If a State doesn't require filing for a water right, but permits it, then the applicant files as an added loan protection. The applicant must furnish further evidence that the water supply will be adequate and that his use of it won't interfere with other users.

The applicant will look to the Extension Service, Soil Conservation Service, other agencies, or private individuals or firms for technical help in planning and installing the improvements. Farmers Home Administration helps the applicant see that the engineering is feasible, that the cost estimates and plans appear complete and reasonable, and that the improvements are economically sound and in line with approved practices. The agency will make sure the funds are used for authorized purposes and that the construction meets approved standards.

The borrower pays any charges for technical services and if necessary may include them in his loan. Farmers Home Administration personnel will help develop and carry out sound farm and home plans that call for major land-use adjustments and extensive reorganization of the farm business.

The soil and water conservation loan program was launched about September 1954. By the middle of December more than 4,200 applications had been received, with the heaviest demand coming from the Southern States.



Massachusetts  
4-H Club members

## Learn Fish and Game Conservation

GEORGE E. BRODIE, JR.

Associate County Club Agent, Cape Cod Extension Service, Mass.

FOURTEEN 4-H boys and girls, members of the Broad Swamp 4-H Club of Bourne, Mass., bought 60 day-old, ring-neck pheasant chicks with their conservation club funds, then raised and sold them to the town of Bourne. In the 1954 town warrant, funds had been set aside for this purpose.

Under the guidance of their leader, Richard B. Jackson, two members of the club went to another county and purchased the 60 chicks for 35 cents each. Their funds had been raised from club dues of 10 cents a week and prize money from 4-H competitive events.

For the first 3 weeks the birds were housed in a brooder cared for by club members. During this period, the boys and girls debeaked the birds to prevent cannibalism and also vaccinated them for Newcastle disease. Debeaking was done with an electrical debeaker lent by Donald P. Tullock, sheriff of Barnstable County and an active supporter of youth work.

The total expenses of the project were borne by the Bourne 4-H Club. During the project, movies and slides were made to show the various steps in raising the birds. When they were fully grown, at 22 weeks of age, they were sold to the town of Bourne and released under the supervision of the State Game Department and Sportsman's Club of Bourne.

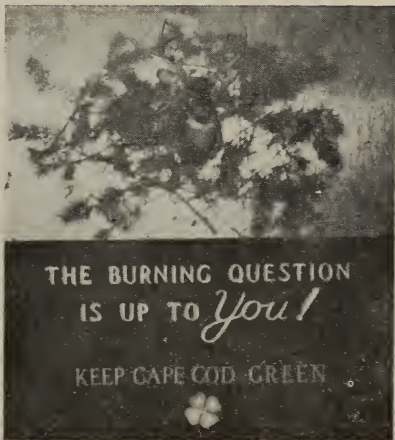
Of the 60 birds purchased, only 10 percent were lost, and about half of these were birds that escaped and are known to be surviving.

This same club maintains a nursery of over 12,000 trees of various species and shrubs that are planted throughout the Bourne area to provide game feeding and cover for the birds and to reforest the town. This nursery was established with the help of Darrel Shepherd, soil conservationist on Cape Cod.

The center of activities for this club is located in a 55-acre preserve with a log cabin clubhouse where regular weekly meetings are held. Here the boys and girls learn good conservation practices by doing.



One of the pheasants raised and sold by 4-H Club members.



Publicity like this helps to keep Cape Cod residents conservation conscious.

## The Soil Survey

(Continued from page 46)

also to look around at the lay of the land and the relation to other soils. Slope is especially important. If there are stones or rock outcrops, we need to know about them. Other facts about how the soil takes and holds water, and how easily it washes or blows away, have to be learned by watching it over a period of time or by making special measurements.

Controlled experiments, such as yields from measured plots under known treatment, are useful. Chemical and physical analyses are also helpful, although often more so to the scientist who wants to understand how the soils were formed than they are directly to the technician who advises farmers. Quick soil tests supplement what is known in general about each soil. They are useful in making exact recommendations about amounts of lime and fertilizer to be used on specific fields, but should always be interpreted by someone who has had a lot of experience with the particular soils.

## Source of Water

(Continued from page 45)

voirs. The total Loch Raven watershed area comprises 191,360 acres. The city owns 5,691; and the rest of the watershed is privately owned, most in farmland.

At present, 861 farmers representing about 100,000 acres in and near the watershed are cooperating with the Soil Conservation District in establishing some major conservation measures on their farms. About 25,000 acres are in contour farming, 20,000 in contour strip cropping, and 1,200 acres are planted in trees.

Mr. Ningard spoke of the seriousness of the sedimentation problem and that the water users of Baltimore City and farmers in the watershed area have a common interest. He said, "If you use your land for agricultural crops, follow approved soil and water conservation practices. If you have a piece of land which lies idle or is producing poor crops and weeds, you should plant it to trees."



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## New ideas every month

To keep informed on the conservation of soil and water, read the SOIL CONSERVATION magazine, a 16-page, illustrated, official organ of the Soil Conservation Service, USDA. It is obtainable at \$1.25 per year from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.



## Other publications available . . .

The Multiflora Rose for Fences and Wildlife, Leaflet No. 374

*Multiflora rose, an economical and beautiful living fence, helps to control erosion and provides food for useful wildlife.*

Conservation Irrigation, Agriculture Information Bulletin No. 8

*Conservation irrigation means savings in water, control of erosion, better crop yields, lower production costs, and assurance of continued productivity.*

Our Productive Land . . . We Can Conserve and Improve It While Using It, Agriculture Information Bulletin 106

*By using the best conservation practices we know about, we can check erosion, build up soil fertility, and regulate the supply of water so that land will produce more and more year after year.*

From the Dust of the Earth, Agriculture Information Bulletin No. 78

*From soil—the dust of the earth—we get the necessities of life and also many of the luxuries.*

*For copies of the bulletins write to*

The Soil Conservation Service, U. S. Department of Agriculture, Washington 25, D. C.